

CLAIMS

1. Adjusting cylinder for long, rapid lifting movements in rolling stands, including vertical edging stands, wherein each cylinder has at least one piston, which acts by means of the bearing chocks of at least one work roll or of an interposed roll to adjust a work roll on both sides, wherein each adjusting cylinder has a piston (K0) that is equipped with two oppositely directed piston rods (ST1, ST2), and each piston is inserted in a recess in the cylinder base (ZB) or cylinder cover (ZD), such that said base and cover have coaxially arranged bores through which the piston rods (ST1, ST2) pass, characterized by the fact that the surface (A1) formed by the piston (K0) and the piston rod (ST1) is smaller than the surface (A2) formed by the piston (K0) and the piston rod (ST2).

2. Adjusting cylinder in accordance with Claim 1, characterized by the fact that the bores contain holding fixtures for piston rod guide elements, which preferably are realized as metal bushings (BU1, BU2), or are realized as guide rings, and are held by covers (DE1, DE2).

3. Adjusting cylinder in accordance with Claim 1 or Claim 2, characterized by the fact that seals (DI1, DI2, DI3) that

belong to the cylinder are located in the cover (DE1) and (DE2) and in the piston (KO) (Figure 1), or guide rings with the seals are held in the covers (DE1) and (DE2).

4. Adjusting cylinder in accordance with one or more of Claims 1 to 3, characterized by the fact that the cylinder base (ZB) and cylinder cover (ZD) are joined with screws (SR2).

5. Adjusting cylinder in accordance with one or more of Claims 1 to 4, characterized by the fact that the complete adjusting cylinder is joined with the upright of the rolling stand with screws (SR1).

6. Adjusting cylinder in accordance with one or more of Claims 1 to 5, characterized by the fact that a casing (KA) is present as an extension of the cylinder base (ZB), which casing (KA) either protects the piston rod (ST2) or can be used as an additional oil chamber (OL3).

7. Adjusting cylinder in accordance with one or more of Claims 1 to 6, characterized by the fact that a position measuring system or the like, which is realized as a position sensor (PG), is present as an extension of the casing (KA) and detects the position of the piston (KO).

8. Adjusting cylinder in accordance with one or more of Claims 1 to 7, characterized by the fact that a thrust member (DS) is present as an extension of the piston rod (ST1) for acting on the roll chocks.

9. Adjusting cylinder in accordance with one or more of Claims 1 to 8, characterized by the fact that the piston (KO) has an antitorsion device.

10. Adjusting cylinder in accordance with one or more of Claims 1 to 9, characterized by the fact that the piston rod (ST1) joined with the thrust member (DS) is enclosed by a convoluted bellows.

11. Method for operating the adjusting cylinder, comprising a piston (KO), which is frictionally movable in a housing with at least two parts (G1, G2) between pressure surfaces (A1, A2, A3) and which acts on a chock (ES) of a rolling stand, characterized by the fact that, for rapid advance of the piston (KO) with reduced force, pressure is applied to surface A2, while no pressure is applied to the surfaces A1 and A3.

12. Method for operating the adjusting cylinder, comprising a piston (KO), which is frictionally movable in a housing with at least two parts (G1, G2) between pressure

surfaces (A1, A2, A3) and which acts on a chock (ES) of a rolling stand, characterized by the fact that, for edging with great force, pressure is applied to the surfaces A2 and/or A3.

13. Method for operating the adjusting cylinder, comprising a piston (KO), which is frictionally movable in a housing with at least two parts (G1, G2) between pressure surfaces (A1, A2, A3) and which acts on a chock (ES) of a rolling stand, characterized by the fact that, for rapid return of the piston (KO), pressure is applied to surface A1, while no pressure is applied to the surfaces A2 or A3 and A3 or A2.

14. Method for operating the adjusting cylinder, comprising a piston (KO), which is frictionally movable in a housing with at least two parts (G1, G2) between pressure surfaces (A1, A2, A3) and which acts on a chock (ES) of a rolling stand, in accordance with Claim 13, characterized by the fact that, for rapid return of the piston (KO), a separate pull-back cylinder is used, with as little pressure as possible applied to surfaces A2 and A3, such that the size of the surface A1 can also be zero (plunger cylinder).